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10/532,501

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Kazuo Morichi

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RADER FISHMAN & GRAUER PLLC
LION BUILDING
1233 20TH STREET N.W., SUITE 501
WASHINGTON, DC 20036

EXAMINER

WOODS, ERIC V

ART UNIT

PAPER NUMBER

2628

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DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/532,501

Applicant(s)

MORICHI ET AL.

Examiner

Eric Woods

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 May 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 13, 15, 19-25, 28 and 30-33 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 13, 15, 19-25, 28 and 30-33 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

Applicant's claim amendments, filed 5/25/2007, with respect to the rejection(s) of claim(s) 13, 15, 19, 20, 22-25, and 28 under various statutes have been fully considered and are persuasive.

Any grounds of rejection that have been withdrawn have been done solely because of applicant's amendments to the claims.

The objections to the drawings stand withdrawn in view of applicant's amendments thereof.

The objection to the specification does not stand withdrawn.

The objections to claims 13-27 stand withdrawn in view of applicant's clarifications.

In view of applicant's amendments to the claims, the rejection of claims 13, 15, 19, 20, 22-25, and 28 under 35 USC 101 stands withdrawn.

In view of applicant's amendments to the claims, the rejection of claims 13, 15, 19, 20, and 22-25, under 35 USC 112, second paragraph, stands withdrawn.

In view of applicant's amendments to the claims, the rejection of claims 13, 15, 19, 20, 22-25, and 28 under 35 USC 103 stands withdrawn.

However, upon further consideration, a new ground(s) of rejection is made in view of various references as set forth below.

Claims 29-33 have been added.

Specification

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The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed. The amended title is still not specific.

Claim Objections

Claim 31 stands objected to because of the following informalities: it is improperly dependent upon claim 28 where it should be dependent on claim 13 ("CAD system"). Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 13, 19, 25, and 28 are rejected under 35 U.S.C. 102(b) as being anticipated by Iriguchi et al (US 6,047,225 A1)('Iriguchi').

As to claims 13 and 28 (13 = CAD system, 28 is a computer readable medium, "computer readable medium" addressed below)

A CAD system comprising: (Iriguchi Abstract, Figures 1-7, 1:35-2:35)

-A memory unit having a processing information group and a process definition group includes a process body division and wherein the process definition group containing definitions of a plurality of process operations,

(Iriguchi 3:25-43: In FIG. 1, reference numeral 1 denotes an operation/display section for transmitting an input received

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from an operator to each function portion and displaying an output from each functional portion on a screen. Reference numeral 8 denotes a prepared material shape database for storing several material shapes represented by three-dimensional solid models prepared in advance. Reference numeral 2 denotes a material shape defining section for taking out the material shape data designated by the operator from the prepared material shape data, defining the shape transformed into a size designated by the operator and storing the defined shape data in the material shape database 10. Reference numeral 9 denotes a prepared machining unit database serving as a machining unit preparing section for previously storing several machining units composed of unified information of machining attributes such as a machining area represented by a three-dimensional solid model, a machining method and a tool information for machining the machining area. "Processed body" is equivalent to block W in for example Figure 6A, other elements described 3:48-4:40, See Figures 3A, 3B which 4:60-5:5 – plurality of process operations = "11, 12" Figure 1, 4:12-32, other elements as explained above, "Processing information group" = elements 8, 10 (different portions of body data in each) – see 3:23-45, 4:8-20; "Process definition group" – elements 9 and 11 – see 3:39-44 and 4:13-26, the nature of the machining and the type of operation are stored in the two databases as set forth in the cited sections)

-A display device that displays an image; (Iriguchi Figure 1, element 1, "operation display")

-An input device; and (Iriguchi Figure 4; Figure 1, element 1, input console 3:24-29)

-A controller, in which upon selection of a series of process operations from the plurality of series of process operations (Iriguchi Figure 4 step 18, machining order ("series of process operations") and the accompanying machining area generated by each one (see Figures 3A-3B and Figure 6B exemplary)) and selection of a part to be removed from an original product body via the input device, a shape parameter of the selected part body is extracted from the original product body (Iriguchi selected part body (example: Figures 3A-B, 3:54-58) to be extracted is shown in Figure

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6, for example, e.g. one region on left (RU_0 - RU_3 , RU_0 in the instant case) machining area RCU_0 copy of RU_0 explained in 4:55-5:5, Figure 5, step 27), **a tool parameter for processing is determined based on the selected series of process operations and the extracted shape parameter** (Iriguchi Figure 4, step 17, 5:60-6:15, as shown parameter adjusting in Figures 15A-15B), **and a process body which represents a shape of a portion to be removed and corresponds to the selected part** (Iriguchi Figures 3A-3B, 6B, 7A-7B, etc, as explained in 4:60-5:5 –copy of region to be removed, e.g. process body), **is generated separately from the original product body information based on the selected series of process operations and the extracted shape parameter** (Iriguchi, 4:60-5:5, copy of region is generated and stored separately, Figure 5, steps 26-28; Figure 4, step 15, Figure 1, element 10, “Material Shape Database”), **of the process body is stored in the process body data division** (Iriguchi stores that information in element 4, Figure 1, 4:12-16), **the tool parameter is stored in the process-contents division** (Iriguchi takes tool information from machine unit 11 in Figure 1, specifically also element 9, which stores machine attributes such as 3D solid model, machining method, tool, etc; see also machining unit 2B, steps 15-17 Figure 4, selection of unit in Figure 8, change attributes flow chart in Figure 13, adjust tool parameters Figures 15A-15B), **and the process body is displayed on the display device** (Iriguchi final output product shown in review steps 18-19 Figure 4, Figures 17A-17B, 6:40-55, 5:55-6:12, etc).

As to claim 28 specifically, Iriguchi clearly teaches a computer readable medium in 1:35-2:35, clearly an “automatic programming system” that utilizes software

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constructs must inherently be stored on in a non-volatile memory (storage). Further, the automatic programming system is described in 6:59-7:15, and compared to "conventional automatic programming apparatus." This conventional programming schema is described as being software (1:5-35).

As to claim 19, clearly Figures 6A-6B, 7A-7B, etc illustrate the display control unit, where the selected part is highlighted, e.g. Figure 6B, and "work contents" related to the process body can be displayed (e.g. Figures 14, 15A-15B), where "work contents" means the specifically highlighted region RCU₅ in Figure 14 and the associated machining parameters that are shown in Figures 15A, 15B such as "machining type," "finish margin," etc.

As to claim 25, clearly Figures 6A-7B, etc, illustrate the three-dimensional showing of the part on the display device.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.

4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 15, 31, and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Iriguchi as applied to claims 13, 28, 30, and 32 above, and further in view of Taylor et al (US 5,991,528 A1).

As to claim 15, Iriguchi does not expressly teach but Taylor teaches (6:65-7:10, Figures 6B, 7-8, etc) **a variety of shapes are defined by using combinations of the tool definition group.** Tool definition group is found to include process section 152 (with more specifics in 172 in Figure 7, 10:23-35, 11:25-40) that operates on various body portions, where body-specific operations are included. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Iriguchi to utilize composite shape definitions because such a modification would allow for linked regions to be stored as one entity and ensure easier visualization, e.g. it facilitates a unitary data format (Taylor 5:50-6:30) and has other benefits, such as allowing designs to be merged regardless of the data source (Taylor 6:65-7:10, 8:18-40).

As to claims 31 and 33, Iriguchi does not expressly teach but Taylor teaches **a shape of the process body differs from that of the selected part which corresponds to the process body**, as in the rejection to claim 15 above, which is incorporated by reference. That is, parts can be combined together; their size can be manipulated (Figures 9A/9B, 5:30-45, Figures 15A-15B, etc). Rationale is taken from incorporated rejection.

Claims 20 and 24 are rejected under 35 USC 103(a) as unpatentable over Iriguchi as applied to claim 13 and further in view of Frey et al (US 5,691,909).

As to claim 20, Iriguchi does not teach the limitation but does teach simulating the manufacturing of parts; Frey teaches simulating parts and generating an 'error shape' to show the difference between the desired part and the capabilities of the machine – see Abstract and Figure 3, 16:1-20). It would have been obvious to one of ordinary skill in the art at the time the invention was made to add the error displaying techniques of Frey to the system of Iriguchi so that the system of Iriguchi would show the resultant error from machining as a result of the simulation, as in Frey element NC step review 19 in Figure 4 (after Monte Carlo analysis – 6:25-40, 11:30-12:20) and Iriguchi Figures 17A-17B and the like, so that the results would be better understood and visualized by the user.

As to claim 24, Iriguchi clearly illustrates various process steps – which creates and displays on the display screen information of the selected series of process operations – see review steps 18-19, where the selected series of operations is reviewed as the system performs the passes as shown (it is displayed; see Figure 17-18), quoting "FIGS. 17 and 18 show an example of processing of tool path display and machining simulation. FIG. 17A shows the state where the selected machining unit CU.sub.4 (not shown) has been selected. FIG. 17B shows the state where the tool path TP.sub.4 created for the selected machining unit CU.sub.4 is displayed. FIG. 18 shows the state where the machining simulation is

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performed on the basis of the NC data for the selected machining unit CU.sub.4 and displayed. The operator refers to the tool path and the machining simulation result as shown in FIGS. 17B and 18, and corrects the machining units if it is inconvenient." Figures 15A-15B for specific details of any given operation, etc, but does not expressly teach displaying information of the selected series of process operations.

Frey does teach **showing such shapes for each part at a selected location**, as stated above with reference to claim 20, the rejection to which is incorporated by reference in its entirety inclusive of the cited locations in the Frey reference.

Specifically, the error shapes are shown in 16:8-25, 12:24-45, and especially in 11:30-12:20, "Error shapes of a wide variety of errors can be ... displayed..."

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to allow the user to choose a location (which would be associated with an object) and view the operations located therein for at least the reason that the system of Iriguchi would show the resultant error from machining as a result of the simulation, as in Frey element NC step review 19 in Figure 4 (after Monte Carlo analysis – 6:25-40, 11:30-12:20) and Iriguchi Figures 17A-17B and the like, so that the results would be better understood and visualized by the user.

Claim 21 is rejected under 35 USC 103(a) as unpatentable over Iriguchi in view of Frey as applied to claim 20, and further in view of Takada et al (US PGPub 2001/0040995 A1).

As to claim 21, Iriguchi/Frey fail to expressly teach this limitation, but Takada teaches superimposing error difference elements in different colors in [0089] to make such differences more visible and easy to understand. It would have been obvious to one of ordinary skill in the art at the time the invention was made to display the error meshes and whatnot of Frey in different colors because it improves visibility of the graphics and the like, as taught by Takada – see [0053,0085-0095, and the like].

Claims 22-23 are rejected under 35 USC 103(a) as unpatentable over Iriguchi as applied to claim 13 above, and further in view of Watanabe (US 5,701,403 A).

As to claim 22, Iriguchi does not expressly teach this limitation, but Watanabe teaches deleting segments of three-dimensional composite objects in such a way that the rest of the object remains, such that if the system of Watanabe has such a component removed as in step 16, Figure 4, and Figures 11-12B, it will remove the process data associated with it because the linkages are assigned in that manner, see for example steps 16-18 in Figure 4, where deletions in the solid object database are complete, and based on the process data being linked to the surface and body data, as in Figures 4-17B, it would have been obvious to one of ordinary skill in the art at the time the invention was made to remove the corresponding data structures based on the teachings of Watanabe as cited above so as to remove all unnecessary data structures from memory and to remove the unnecessary data links as described in the above cited sections of Watanabe.

As to claim 23, Iriguchi does not expressly teach this limitation (although the $RU_0 \rightarrow RCU_0$ transform mapped in Figure 6B does show copy in principle, but not of part per se), but Watanabe teaches copying the parts and their specifications in 17:1-23, where such would have been obvious to one of ordinary skill in the art at the time the invention was made because it thereby obtains the whole shape of the object, as set forth in Watanabe at the recited location and for the reasons above.

Claims 30 and 32 stand rejected under 35 USC 103(a) as unpatentable over Iriguchi as applied to claims 13 and 28 above.

Specifically, Iriguchi does not teach, "profiling operation" but it teaches various types of milling, boring, drilling, and other operations. Therefore, examiner submits it would have been obvious to one of ordinary skill in the art at the time the invention was made to include such well-known operations in the known processed shapes of Iriguchi.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the

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shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eric Woods whose telephone number is 571-272-7775. The examiner can normally be reached on M-F 8am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ulka Chauhan can be reached on 571-272-7782. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Eric Woods

9/24/2007


ULKA CHAUHAN
SUPERVISORY PATENT EXAMINER